



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/727,559	12/01/2000	Hemant M. Chaskar	NC17368	6748

26933 7590 04/01/2004

ROBERT C. ROLNIK
NOKIA INC.
6000 CONNECTION DRIVE
MD 1-4-755
IRVING, TX 75039

EXAMINER

JUNTIMA, NITTAYA

ART UNIT	PAPER NUMBER
----------	--------------

2663

5

DATE MAILED: 04/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/727,559

Applicant(s)

CHASKAR ET AL.

Examiner

Nittaya Juntima

Art Unit

2663

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 December 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 December 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to because items 100-509 in Figs 1A, 1B, 2, 3a, 3b, 4A, 4B and 5 should be properly labeled as disclosed in the specification for clarity purposes, e.g. items 100 and 101 in Fig. 1A should be labeled as “a data structure” and “a list element” as disclosed on page 4, lines 30-31 and on page 5, lines 15 of the specification. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claims 2, 6, 8, 12, 20, 24, 26-27, and 30-31 are objected to because of the following informalities:

- in claims 2 and 20, line 3, “an” should be changed to “the;”
- in claim 6, line 3 and claim 24, line 2, “a” should be changed to “an;”
- in claim 8, line 3 and claim 26, line 2, “the” should be added after “by;”
- in claim 12, line 4, a semicolon after “period” should be deleted;
- in claim 27, line 1, “18” should be changed to “19;”
- in claim 30, line 1, “30” should be renumbered as “28;” and
- in claim 31, line 1, “29” should be renumbered as “29.”

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. Claims 1-11 and 19-29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, the limitation "future portion" in line 3 and 4 of the claim is vague and indefinite. It cannot be determined from the claim language as what the future portion is and how the future portion is related to a data structure and a current-tree. Is the future portion also a tree(s)? Moreover, the limitation "transmitting the packet on an output link" in line 9 of the claim is vague and indefinite. There is no correlation between "transmitting the packet on an output link" and the other two steps, i.e. adding the tag or removing the tag. Therefore, the claim is vague and indefinite.

Claim 19 is an apparatus claim corresponding to method claim 1, and is, therefore, rejected under the same reason set forth in the rejection of claim 1.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5, 10, 12-17, 19-23, and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Lauer et al. (USPN 5,455,825).

Art Unit: 2663

Per **claim 1**, Lauer et al. teach **a packet** (a packet or cell, Abstract and col. col. 1, lines 15-37, and col. 3, lines 39-44), **a release time** (not defined, reads on an arrival time which is the time when the cell is inherently released from an input link 14 and arrives at an input processing module 16, Fig. 1, col. 6, lines 6-13, see also col. 13, lines 45-53), **a tag having a tag value** (a tag and its value, col. 4, lines 14-25 and col. 6, lines 6-13), **adding the tag to a future portion** (a future portion is not defined, reads on new entries of the queue) **of a data structure** (queue 18 in Fig. 1) **based on a release time** (at least one tag associated to an arriving cell is added to one of the new entries at the tail of the queue 18 wherein the tag has a tag value which is based on arrival time of the cell, col. 6, lines 6-13, 20-27, 44-64), **a current-tree** (not defined, reads on a queue entry 39 with a destination 1001 in Fig. 2A which is the current entry that was inherently added prior to the addition of new tags, col. 6, lines 48-52 and col. 7, lines 18-20), **the future portion having storage capacity for at least two tags** (it is inherent that new entries as shown in Fig. 2A in a queue 18 of Fig. 1 must have storage capacity that stores at least two tags since after each cell cycle there will be N tags/cells outputted to N output processing units thereby leaving N entries available for storing new tags, col. 6, lines 33-64), **removing the tag from an eligible set of tags** (an eligible set of tags is not defined, reads on tags that are in the queue 18 of Fig. 1 including the tag of the cell of one of the new entries) **based on the tag value** (it is inherent that when the tag associated with the new cell which has just been added into one of the empty entries at the tail of the queue 18 has the smallest tag value, e.g. highest priority, for a selected destination then the tag is removed from tags in the queue 18 for cell transmission and the entry is to be set as unused to receive a new entry, Figs. 1, 2A, and 3, col. 8, lines 5-45, see also col. 6, lines 48-64 and col. 7, lines 18-20), and **transmitting the packet on an output link** (the

Art Unit: 2663

cell/packet associated with the tag with the smallest tag value is then selected and transmitted on an output link 30 in Fig. 1 and col. 6, lines 33-43 and col. 3, lines 39-52).

Per **claim 2**, Lauer et al. teach *selecting the eligible set of tags* (the eligible set of tags, which includes tags already in the queue 18 and the tag of one of the new entries, is selected by input processing module 16 in Fig. 1 before the step of removing, col. 6, lines 6-13 and 20-27).

Per **claim 3**, Lauer et al. teach *selecting at least one post-current tag, including the tag* (post-current tag is not defined, reads on the tag of one of the new entries assigned by an input processing module 16 and added to one of the empty entries in the queue 18, Fig. 1, col. 6, lines 6-13 and 20-27).

Per **claim 4**, Lauer et al. teach *selecting a tag having a smallest tag value in a post-current tree* (a post-current tree is not defined, reads on new entry which has been added to queue 18 in Fig. 1, it is inherent that in a case when a tag of the new entry has the smallest tag value it will then be selected for transmission to the selected destination, col. 8, lines 37-42, see also col. 4, lines 26-30).

Per **claim 5**, it is inherent that at the end of a cell cycle, the current entry located nearest the tail of the queue 18 in Fig. 1 would be shifted forward toward the head of the queue to occupy the unused entry and therefore leaving the entry nearest the tail of the queue available for the future portion (one of the new entries) (Fig. 2A and col. 6, lines 39-53).

Per **claim 10**, it is inherent that at the end of a cell cycle, the current entry (a current-tree pointer) located nearest the tail of the queue 18 in Fig. 1 would be shifted forward toward the head of the queue 18 (the data structure) to occupy the unused entry and therefore leaving the entry available for the future portion (the new entries) (Fig. 2A and col. 6, lines 39-53).

Art Unit: 2663

Claims 19-23 and 28 are apparatus claims corresponding to method claims 1-5 and 10, respectively, and are therefore rejected under the same reason set forth in the rejection of claims 1, 5, and 10.

Per **claim 12**, Lauer et al. teach **a packet** (a packet or cell, Abstract and col. col. 1, lines 15-37, and col. 3, lines 39-44), **a release time** (not defined, reads on an arrival time which is the time when the cell is inherently released from an input link 14 and arrives at an input processing module 16, Fig. 1, col. 6, lines 6-13, see also col. 13, lines 45-53), **a selected tag having a tag value** (a tag and its value calculated by an input processing module 16 in Fig. 1, col. 4, lines 14-25 and col. 6, lines 6-13), **selecting a selected tree** (a selected queue entry with smallest tag value and closest to the head of the queue) **from at least two trees based on the release time** (two entries (a first tree and a second tree) with the same smallest tag value are selected for a particular destination, but the entry located nearest the head of the queue, i.e. earlier arrival time, is selected, col. 8, lines 5-30 and 37-45), **storing the selected tag in an order in the selected tree** (the selected tag is stored in an order in the tag register of the entry queue having the smallest tag value and located nearest the head of the queue, col. 8, lines 18-25 and 37-45), **selecting an eligible set of tags including at least the selected tag** (an eligible set of tags is not defined, reads on tags already in the queue 18 which are all selected by input processing module 16 in Fig. 1, col. 6, lines 6-13 and 20-27), **removing the selected tag from the eligible set of tags** (it is inherent that when the tag value of the selected tag whose entry is located nearest to the head of the queue has the smallest value among the tags in the queue during a cell cycle, it will be removed from the tags in the queue 18 for cell transmission so that the entry will be set as

Art Unit: 2663

unused to receive a new entry, Figs. 1, 2A, and 3, col. 8, lines 5-45, see also col. 6, lines 33-64 and col. 7, lines 18-20).

Per **claim 13**, it is inherent that the step of adding the selected tag to a current tree is included in the step of selecting an eligible set of tags because the tag of a current entry (an entry to which the tag is added) is computed by an input processing module 16 in Fig. 1 and then added into the current entry of the queue 18 (col. 6, lines 6-14).

Per **claims 14 and 15**, Lauer et al teach that an entry is shifted forward toward the head of the queue after a cell cycle (col. 6, lines 44-53), therefore it is inherent that the current tree (an entry to which the tag whose value is computed by an input processing module 16 in Fig. 1 is added, col. 6, lines 6-13) must be advanced to a tree (an entry above it) having at least one tag after a cell cycle as a result of a removal of a tag from an old tree (an entry with smallest tag value during this particular cell cycle is removed for cell transmission) when its tag value was not the smallest value during that cell cycle.

Per **claim 16**, Lauer et al. teach *transmitting a packet* (a cell) *associated with the selected tag* (once the tag with the smallest tag value and nearest to the head of the queue is selected and the cell associated with the selected tag is transmission, col. 7, lines 21-35 and col. 8, lines 37-45).

Per **claim 17**, Lauer et al. *determining that the release time* (not defined, reads on an arrival time which is the time when the cell is inherently released from an input link 14 and arrives at an input processing module 16, Fig. 1, col. 6, lines 6-13, see also col. 13, lines 45-53) *is smaller than a discard time* (not defined, reads on an arrival of the other entry (a second tree)) *prior to selecting a tree* (arrival times of the two entries with the same smallest tag value are

Art Unit: 2663

compared and the entry with earlier arrival time is selected as explained in claim 12, see also col. 8, lines 5-30 and 37-45).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 6-7 and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lauer et al. (USPN 5,455,825).

Per **claim 6**, Lauer et al. fail to teach destroying an old tree at a location T steps from the current-tree and the data structure has at least $2 \cdot T$ trees.

However, Lauer et al. teach removing tag for cell transmission when an entry has the smallest tag value and setting destination bits to be zero (Figs. 1, 2A, and 3, col. 8, lines 5-45, see also col. 48-52 and col. 7, lines 18-20), shifting queue entries forward toward the head of the queue after each cell cycle (col. 6, lines 39-53), and having a queue with hundred of entries (col. 8, lines 19-22).

Therefore, it would have been obvious to one skilled in the art to incorporate destroying an old tree (setting an entry whose tag with smallest tag value is removed as unused) at a location T steps (T entries) from the current-tree (last entry at the tail of the queue prior to the addition of any new entries, i.e. queue entry 39 with a destination 1001 in Fig. 2A) and configuring the data structure (queue 18 in Fig. 1) to be at least $2 \cdot T$ trees ($2 \cdot T$ entries) into the teaching of Lauer et

Art Unit: 2663

al. to make an entry that is T steps from the current-tree available for a new entry in a queue of a size of at least $2 \cdot T$ entries provided that T is a reasonable number which will not alter the operation and the result of queue 18 of Lauer et al.

Per **claim 7**, Lauer et al. teach that more than one queue entry can have the same smallest tag value (col. 8, lines 42-45), therefore, it is inherent that a tag of the old tree (an entry whose tag with smallest tag value is removed and set as unused) is reallocated.

Claims 24 and 25 are apparatus claims corresponding to method claims 6 and 7, respectively, and are therefore rejected under the same reason set forth in the rejection of claims 6 and 7.

Allowable Subject Matter

6. Claims 8-9, 11, 18, 26-27, and 29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nittaya Juntima whose telephone number is 703-306-4821. The examiner can normally be reached on Monday through Friday, 8:00 A.M - 5:00 P.M.

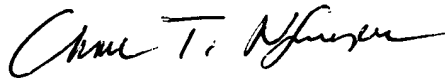
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau Nguyen can be reached on 703-308-5340. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2663

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nittaya Juntima
March 29, 2004

15



CHAU NGUYEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600